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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/032,906

12/28/2001

Steven M. Penn

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11/27/2006

TEXAS INSTRUMENTS INCORPORATED

P O BOX 655474, M/S 3999

DALLAS, TX 75265

EXAMINER

FINEMAN, LEE A

ART UNIT

PAPER NUMBER

2872

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Please find below and/or attached an Office communication concerning this application or proceeding.

54

<b>Office Action Summary</b>	Application No. 10/032,906	Applicant(s) PENN, STEVEN M.	
	Examiner Lee Fineman	Art Unit 2872	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 08 November 2006 and 08 August 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-20, 23-32 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-13, 16-20 and 23-30 is/are rejected.
- 7) ☒ Claim(s) 14, 15, 31 and 32 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Continued Examination Under 37 CFR 1.114*

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 8 August 2006 has been entered in which claims 1 and 17 were amended. Claims 1-20 and 23-32 are pending.

### *Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-3, 5-6, 11-12, 16-19 and 28-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishii et al., US 5,552,840 in view of Poradish et al., US 5,612,753 and Doany, US 5,863,125.

Regarding claims 1, 3, 5, 12, 17, 19 and 29, Ishii et al. teach an image display system (fig. 1) comprising: a light source (1) for providing a beam of light along an illumination path (fig. 1); a sequential color filter (13), which is a color wheel (fig. 4 and column 7, lines 16-22), on said illumination path for filtering said beam of light (fig. 1); a polarizing beam splitter (70) on said illumination path for receiving said filtered beam of light at a first face (fig. 1), separating said

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filtered light beam into a first beam (a) having a first polarization state (S) and a second beam (b) having a second polarization state (P); a first spatial light modulator (12) proximate a second face of said polarizing beam splitter (fig. 1), which is a liquid crystal device (column 8, lines 29-30), receiving and selectively modulating said first beam (a); a second spatial light modulator (12') proximate a third face of said polarizing beam splitter (fig. 1) receiving and selectively modulating said second beam (b), and at least one projection lens (5) on a projection path for focusing said first and second beams on an image plane (6). Ishii et al. disclose the claimed invention except for a total internal reflection prism assembly proximate said first face of said polarizing beam splitter on the illumination and projection paths to separate the illumination and projection paths. Poradish et al. teach image display systems (figs. 1-3) that includes a total internal reflection prism assemblies (28) proximate to a first face of an element (see, e.g., fig. 3, element 52) located on the illumination path from a light source (10) to a first and second spatial light modulator (30a and 30b) and on the projection path from the spatial light modulators to the projection lens (32) to separate the illumination and projection paths (figs. 1-3 and column 3, lines 33-43). It would have been obvious to one of ordinary skill in the art at the time of the invention to add the total internal reflection prism assembly of Poradish et al. into the image display system of Ishii et al. at any position including the claimed first face of said polarizing beam splitter to add flexibility to the projector system by being able to change the shape/configurations of the system for sizing or fitting into a specific space. Further, it is very well known that spatial light modulator can provide different polarization states as evidenced by the display devices of Doany (see at least column 8, lines 25-39). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to manipulate the

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polarization states of the above system as taught by Doany to provide further flexibility for positioning of the elements to be able to change the shape/configurations of the system for sizing or fitting into a specific space. The method of utilizing the structure of the claim is inherent therein.

Regarding claims 2 and 18, Ishii et al. further teach said polarizing beam splitter (70) combining said modulated first and second light beams (c).

Regarding claim 6, Ishii et al. further teach a first prism (72) in said illumination and said projection paths for separating said first beam directed to said first modulator and said modulated first beam from said first modulator; and a second prism (73) in said illumination and said projection paths for separating said second beam directed to said second modulator and said modulated second beam from said second modulator.

Regarding claim 16, Ishii et al. further teach polarized eyewear (column 5, lines 58-60) for a viewer of said image display system.

Regarding claims 11 and 28, Ishii et al. disclose the claimed invention except for said first modulator comprising a micromirror device. Poradish et al. further teach modulators (30a and 30b) in an image display system (fig. 3) being micromirror devices (column 5, lines 53-54). It would have been obvious to one of ordinary skill in the art at the time of the invention to make the modulators of Ishii et al. be micromirror devices as suggested by Poradish et al. to reduce the amount of system hardware (Poradish, column 1, lines 60-63).

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3. Claims 4 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishii et al. in view of Poradish et al. and Doany as applied to claims 1 and 17 above, and further in view of Brennesholtz, US '6,285,415.

Ishii et al in view of Poradish et al. and Doany as applied to claims 1 and 17 above disclose the claimed invention except for a spiral color wheel. Brennesholtz teaches a spiral color wheel (column 3 lines 56 - 62) used to sequentially filter colors in a projection system. It would have been obvious to one of ordinary skill in the art at the time of the invention to use a spiral color wheel of Brennesholtz in the image display system of Ishii et al in view of Poradish et al. and Doany in order to increase the efficiency of the image display system (Brennesholtz, column 2, lines 9-15).

4. Claims 7 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishii et al. in view of Poradish et al. and Doany as applied to claims 1 and 17 above, and further in view of Lee, US 5,121,983.

Ishii et al in view of Poradish et al. and Doany as applied to claims 1 and 17 above disclose the claimed invention except for wherein the modulated light from said first modulator passes through a first projection lens and light from said second modulator passes through a second projection lens. Lee teaches the equivalency of image display systems wherein the modulated light passes through either one projection lens (K, fig. 3) or a first and second projection lens (K-1, K-2 in fig. 4). It would have been obvious to one of ordinary skill in the art at the time of the invention to have the modulated light of Ishii et al. in view of Poradish et al.

and Doany pass through a first and second projection lens as suggested by Lee to provide more flexibility in left and right image positioning.

5. Claims 8-10 and 24-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishii et al. in view of Poradish et al. and Doany as applied to claims 1 and 17 above, and further in view of Gibbon et al., US 2003/0020809.

Ishii et al in view of Poradish et al. and Doany as applied to claims 1 and 17 above disclose the claimed invention except for wherein said first and second modulators are positioned such that pixilated images from said first and second modulators are offset by approximately one-half pixel in both a horizontal direction and a vertical direction at said image plane.

Gibbon et al. teach two modulators positioned such that pixilated images from the modulators are offset by approximately one-half pixel in both horizontal and vertical directions at said image plane (page 1, paragraph [0012]). It would have been obvious to one of ordinary skill in the art at the time of the invention to use the pixel arrangement of Gibbon et al in the image display system of Ishii et al. in view of Poradish et al. and Doany in order to increase the image resolution (Gibbon, paragraph [0012], lines 9-14).

6. Claims 13 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishii et al. in view of Poradish et al. and Doany as applied to claims 1 and 17 above, and further in view of Wang, US 6,097,456.

Ishii et al in view of Poradish et al. and Doany as applied to claims 1 and 17 above disclose the claimed invention except for a recycling integrator on said illumination path for

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homogenizing said light beam prior to said sequential color filter. Wang teaches a display system (Figure 1 reference 100) with a recycling integrator (reference 130) on an illumination path for homogenizing a light beam (column 3 lines 51 - 55) prior to a sequential color filter (reference 120). It would have been obvious to one of ordinary skill in the art at the time of the invention to use the recycling integrator of Wang in the image display system of Ishii et al. in view of Poradish et al. and Doany in order to have uniform light illumination (Wang, column 3, lines 51 - 53).

#### *Allowable Subject Matter*

7. Claims 14, 15, 31, and 32 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: Claims 14, 15, 31, and 32 are have allowable subject matter over the prior art for at least the reasons stated in the office action mailed 21 September 2004.

#### *Response to Arguments*

8. Applicant's arguments with respect to claims 1-20 and 23-32 have been considered but are moot in view of the new ground(s) of rejection.

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9. It is noted by the Examiner that the specification objections made in the previous Office Action have been withdrawn due to amendment by the Applicant.

### *Conclusion*

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Roth US 6,962,414 B2 discloses display systems with sequential color filters, polarizers and total internal reflection prism assemblies.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lee Fineman whose telephone number is (571) 272-2313. The examiner can normally be reached on Monday - Friday 7:30 - 4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Drew Dunn can be reached on (571) 272-2312. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.


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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



LAF

19 November 2006

  
MARK A. ROBINSON  
PRIMARY EXAMINER